Memorandum

To: *Diane Salkie, EPA Region 2*
Elizabeth Franklin, USACE

From: *Troy Gallagher, CDM Smith*

Date: *December 13, 2019*

Subject: *Summary of Oversight of Chemical Water Column Monitoring*
October 1–2, 2019
Lower Passaic River Restoration Project

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) traveled to the Lower Passaic River Study Area (LPRSA) on Tuesday, October 1 through Wednesday, October 2, 2019 and provided field technical oversight for the fourth round of surface water sampling associated with the Chemical Water Column Monitoring (CWCM) program.

Water sampling was conducted at 5 different locations along the Lower Passaic River at the following river mile (RM) locations: RM 8.4, RM 10.2, RM 12.0, RM 13.5, and RM 15.8. Only one sample was collected from RM 15.8 from a mid-depth of the river. For the remaining four locations, two samples were collected from each location, one from the top of the RM location approximately 3 feet below the surface, and the second from the bottom, approximately 2 feet above the river bottom; samples were collected during both flood and ebb tides from each river mile station. Samples were collected using a peristaltic pump to pump water directly into the sample containers. Water quality parameters were recorded at the time of sampling for each location, and a vertical profile was performed before and after samples were collected. Field activities were conducted by Ocean Surveys, Inc. (OSI) and AECOM on behalf of the Cooperating Parties Group (CPG). Anchor QEA provided field support on behalf of the CPG. Split samples were collected by CDM Smith on October 2, 2019.

The fixed point monitoring locations are presented in Figure 1 from the CPG's quality assurance project plan (QAPP). Oversight was conducted in accordance with CDM Smith's Final QAPP for CWCM, dated September 3, 2019. Photographs of field activities are presented in Attachment 1. A copy of the field logbook notes is provided in Attachment 2. A copy of the sample tracking log is provided in Attachment 3.

Summary of Tuesday, October 1, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
James Roth – AECOM
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Street boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith were aboard a separate oversight boat captained by Chris Yates.

All personnel mobilized to RM 12.0 to begin collecting the samples during the flood tide. Upon arrival to RM 12.0, YSI water quality parameters were recorded by AECOM personnel, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was taken before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of RM 12.0. After all sample containers were filled, the YSI was raised and the tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A vertical profile of water quality parameters was collected after sample collection to complete sampling activities at this location.

All personnel mobilized to RM 13.5 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection; OSI collected a vertical profile of water quality parameters before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 13.5 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. In addition to the samples collected from the surface from RM 13.5, AECOM also collected a field duplicate sample. The final vertical profile of water quality parameters was collected and the boat headed back to the Madison Street dock to wait for the ebb tide sampling.

The crew waited on shore until the tide in the river changed so the collection of the ebb tide samples could begin. Betsy Ruffle from AECOM arrived onsite at 12:30 to oversee the afternoon sampling event aboard the Anchor QEA boat. Once the ebb tide had begun, the OSI boat mobilized to RM 15.8 to begin preparations for sampling. OSI collected a vertical profile of water quality parameters and AECOM recorded the water quality parameters and labeled bottleware. Samples were collected from a mid-depth point at RM 15.8 during the ebb tide. A final vertical profile of water quality parameters was collected. The boat departed RM 15.8 to perform ebb tide sampling at RM 13.5.

All personnel mobilized to RM 13.5 to begin collecting the samples during the ebb tide. OSI collected a vertical profile of water quality parameters and AECOM recorded the water quality parameters and labeled bottleware. Samples were collected from the bottom of RM 13.5 during the ebb tide, after which the YSI was raised to the surface, and the tubing was replaced. Water quality parameters were recorded, and the samples were collected from the surface of RM 13.5. A final vertical profile of water quality parameters was collected and concluded the activities at this location. The OSI boat departed from RM 13.5 to collect the final samples of the day at RM 12.0.

All personnel mobilized to RM 12.0 to begin collecting the samples during the ebb tide. OSI collected a vertical profile of water quality parameters and AECOM recorded the water quality parameters and labeled bottleware. Samples were collected from the bottom of RM 12.0 during the ebb tide, after which the YSI was raised to the surface, and the tubing was replaced. Water quality parameters were recorded, and the samples were collected from the surface of RM 12.0. A final vertical profile of water quality parameters was collected, and this concluded the activities for this day of chemical water sampling. The boats returned to the 1 Madison Street dock to unload coolers and prepare samples for shipment.

Summary of Wednesday, October 2, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
James Roth – OSI
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Street boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith rode in a support boat for observation and oversight.

All personnel mobilized to RM 8.4 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 8.4 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 8.4.

All personnel mobilized to RM 10.2 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 10.2 location. CDM Smith collected a split sample from the bottom depth at RM 10.2, including a field duplicate. AECOM alternated filling their bottles and filling the CDM Smith bottles to make sure both samples were representative of the sample location. The split sample was collected with the sample identification of 19Q-CE02-T102-BS-CDM and 19Q-CE02-T102-BS-CDM-100 for the sample and the duplicate, respectively. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 10.2. Both boats mobilized back to the Madison Street dock to await the ebb tide.

After arriving back on shore, Troy Gallagher packed all of the split sample containers in coolers and prepared them for shipment through FedEx. Surface water samples were sent to SGS AXYS laboratory to be analyzed for pesticides, PCBs, PAHs, and dioxin/furans; Katahdin Analytical Services was sent surface water samples to be analyzed for TOC, POC, TSS, total and dissolved metals, and total and dissolved mercury. Four coolers were dropped off at FedEx for overnight delivery. Due to the effort to get the samples to FedEx, CDM Smith was not able to provide oversight for the afternoon ebb tide sampling. However, Troy Gallagher stayed in touch with Clare Murphy-Hagan for the rest of the day to ensure that the sampling was completed.

Figure 1

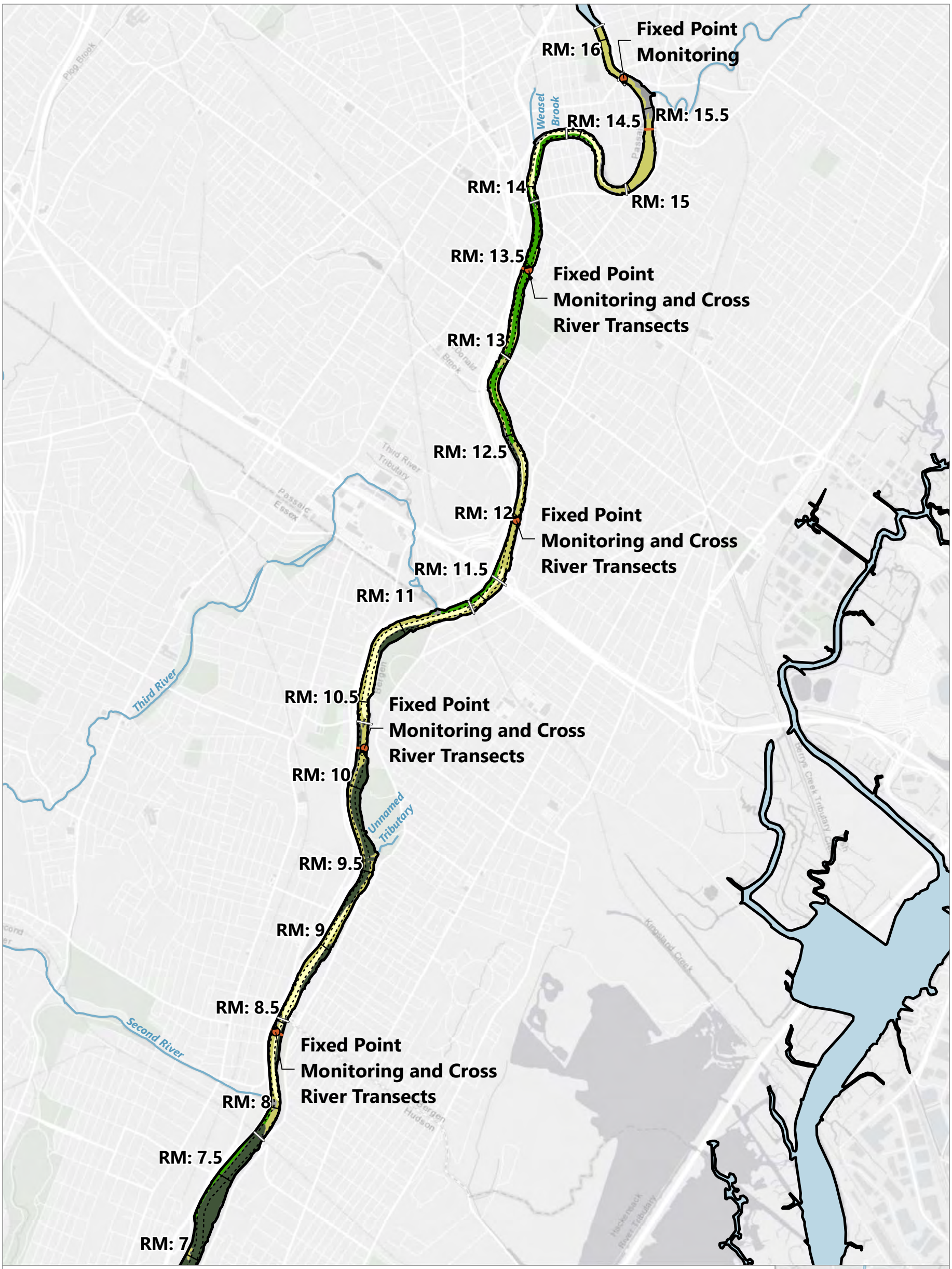

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Figure 1
Current Conditions Monitoring Locations
Field Sampling Plan Addendum
Current Conditions Monitoring Program - Physical Water Column Monitoring
Lower Passaic River Restoration Project

Attachment 1

Photographs of Field Activities

Photograph 1: OSI performing a vertical profile at RM 15.8 while AECOM labels sample containers.

10/01/2019

Photograph 2: AECOM and OSI preparing tubing to be used for sampling at RM 15.8.

10/01/2019

Photograph 3: AECOM collecting samples from RM 15.8 using the peristaltic pump.

10/01/2019

Photograph 4: OSI and AECOM preparing tubing and YSI for vertical profile at RM 13.5.

10/01/2019

Photograph 5: OSI performing the vertical profile at RM 13.5 wile AECOM waits to collect samples.

10/01/2019

Photograph 6: AECOM collecting samples from RM 13.5 using the peristaltic pump.

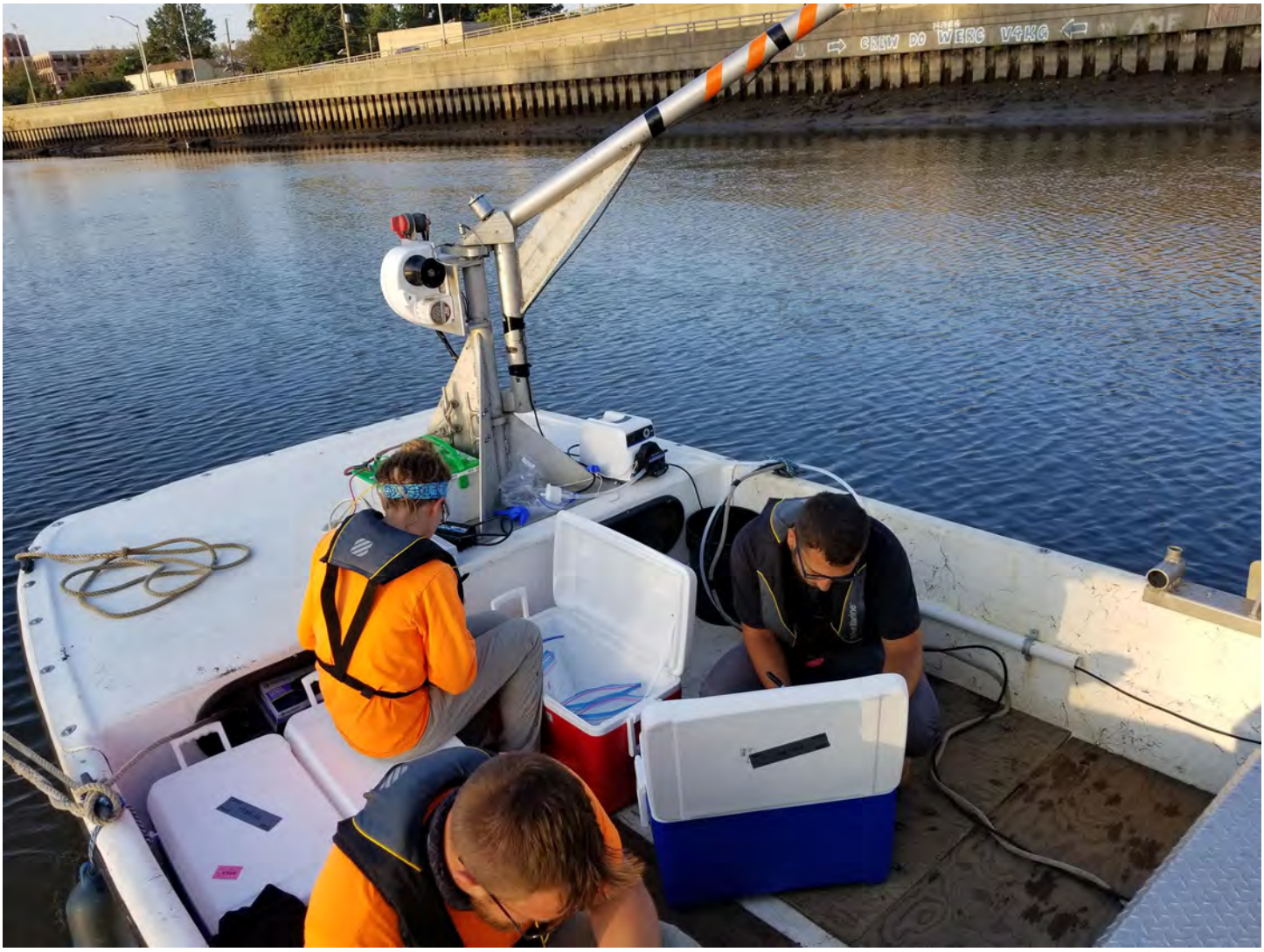
10/01/2019

Photograph 7: AECOM labeling sample containers and preparing for sample collection at RM 12.0.

10/01/2019

Photograph 8: AECOM collecting low level mercury samples from RM 12.0 using clean hands method.

10/01/2019



Photograph 9: AECOM labeling sample containers at RM 8.4 while OSI prepares tubing.

10/02/2019

Photograph 10: AECOM collecting CDM Smith split samples from RM 10.2.

10/02/2019

Attachment 2

Field Logbook

Location Rutherford NJ Date 9/30/19

Project / Client LPR / USACE

RM 10.9 SPME

washer cap added. Yellow tape.

18^{30} Begin deployment at underlying sediment layer. Sampler length: 40.25". Length of sampler sticking out of ground: 6.5". This one is also on a slight angle. DI water, round plate, and cap added. Orange tap.

18^{50} Back on shore. Deconned. TG to record 601 data.

19^{05} TG offsite. To record data upon arrival @ residence.

19^{45} Data from 601: soft sediment thickness: 0-3.5". Habitat sand: 3.5-5.5". Depth to armor: 5.5". Depth to geotextile 11.5". Armor layer sampler length: 18.625", Length of sampler sticking out of ground 9.25". Active layer sampler length: 24.25". Length sticking out: 5". Sediment layer sampler length: 35.75". Length sticking out: 6.5".

9/30/19

Location Rutherford NJ Date 10/1/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

6^{15} TG onsite @ 1 Madison St.

Weather: 80°, partly sunny

PPE: Level D

Purpose: Oversight of CWCM 19Q event

6^{25} TG meets with OSI and Anchor QEA crew at dock loading up boat.

6^{45} AECOM meets on dock. Personnel (OSI) Alexandra Allen, James Roth ~~(AECOM)~~ & Clare Murphy-Hagan, Mike Tatarelli (AECOM), Chris Yates (QEA), TG (COM Smith). H+S meeting given by Clare: hydration, boat safety, Fatigue. TG will be aboard the boat with Anchor QEA.

6^{55} Both boats depart from dock and head to RM 12.0 for first collection.

7^{00} Arrive @ RM 12.0. OSI boat preparing for sampling, ties onto buoy. AECOM labels containers and OSI attaches tubing to YSI.

7^{15} Vertical profile performed. WQ parameters recorded.

7^{20} Samples collected from bottom of RM 12.0, flood tide.

10/1/19

Rite in the Rain

Location Rutherford NJ Date 10/1/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

7 35 Tubing replaced, WQ parameters recorded, containers labeled.

7 45 Samples collected from the top of RM 12.0, flood tide.

8 00 WQ parameters taken, and final vertical profile performed.

8 15 Arrive @ RM 13.5. Attaching tubing to YSI. Vertical profile performed, WQ parameters taken.

8 30 Samples collected from the bottom of RM 13.5, flood tide.

8 45 WQ parameters taken. YSI raised and tubing changed.

8 55 Samples collected from top of RM 13.5, flood tide. AECOM takes a duplicate sample from here also.

9 25 WQ parameters taken, vertical profile performed. Both boats head back to dock.

9 45 Back @ dock, waiting for ebb tide to begin next sampling window.

12 00 TG back onsite, waiting for ebb tide to begin, proposed leave time 12 30.

10/1/19

Location Rutherford NJ Date 10/1/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

12 30 Meet back on dock. AECOM supervisor on site for afternoon sampling. Will ride with TG + Chris on QEA boat. Betsy Ruffle.

12 45 Both boats head up to RM 15.8 to start ebb tide sampling.

13 00 Arrive @ RM 15.8. Waiting for sample window to open. AECOM sets up tubing to YSI.

13 15 Vertical profile completed. YSI placed mid-depth to collect only one sample. @ 7'. WQ parameters taken. Label bottleware.

13 20 Samples collected from mid-depth @ RM 15.8, ebb tide.

13 30 WQ parameters and vertical profile taken, head downriver.

14 00 Arrive @ RM 13.5. Vertical profile performed. WQ parameters recorded.

14 15 Samples collected from bottom of RM 13.5, ebb tide.

14 25 WQ parameters taken, YSI raised and tubing replaced.

10/1/19

Location Rutherford NJ Date 10/1/19

Project / Client LPR / USACE

Diamond Alkali: 044 / CWCM

1430 Samples collected from top of RM 13.5, ebb tide.

1450 WQ parameters and vertical profile taken.

1505 Arrive @ RM 12.0. Vertical profile taken. WQ parameters taken.

1510 Samples collected from bottom of RM 12.0, ebb tide.

1530 WQ parameters taken. YSI raised to surface and tubing replaced.

1540 Samples collected from top of RM 12.0, ebb tide.

1555 WQ parameters and final vertical profile taken. Both boats head back to dock.

1630 TG offsite

TG 10/1/19

Location Rutherford NJ Date 10/2/19

Project / Client LPR / USACE

Diamond Alkali 044 / CWCM

645 TG onsite

Weather: 90°, sunny

PPE: Level D

Purpose: Oversight of CWCM sample and collection of split sample.

650 TG getting sample containers ready for split sample, loading coolers.

700 All coolers loaded on AQEA boat. Both crews meet on dock. Personnel: Alex Allen, James Roth (OSI). Clare Murphy-Hagan, Mike Tatarelli (AECOM). Chris Yates (AQEA), + TG (CDM Smith) H+S meeting given by Clare.

710 Both boats depart from dock.

740 Arrive at RM 8.4. Setting up YSI tubing and waiting for sampling window to open.

750 Vertical profile taken. WQ parameters recorded. Bottles labeled

757 Samples collected from bottom of RM 8.4, flood tide.

800 WQ parameters taking. YSI raised and tubing replaced.

TG 10/2/19

Location Rutherford NJ Date 10/2/19

Project / Client LPR / USACE

Diamond Alkali 044 / CWCM

8^{20} Samples collected from top @ RM 8.4, flood tide.

8^{35} WQ parameters recorded and vertical profile performed. Coolers swapped btwn boats

8^{50} Arrive @ RM 10.2. Vertical profile and WQ parameters taken. CDM Smith will collect split sample from the bottom here

9^{00} Samples collected from bottom of RM 8.4. CDM splits collected.

19Q-CE02-T102-BS-CDM +

19Q-CE02-T102-BS-CDM-100

Duplicate collected as "-100".

9^{40} WQ parameters taken, YSI raised and tubing changed. Water slightly turbid.

9^{50} Samples collected from top of RM 10.2, flood tide.

10^{05} WQ parameters taken, vertical profile performed. Both boats head back to Madison St. dock.

10^{30} Back @ dock. TG begins labeling and packing bottles into coolers

Location Rutherford NJ Date 10/2/19

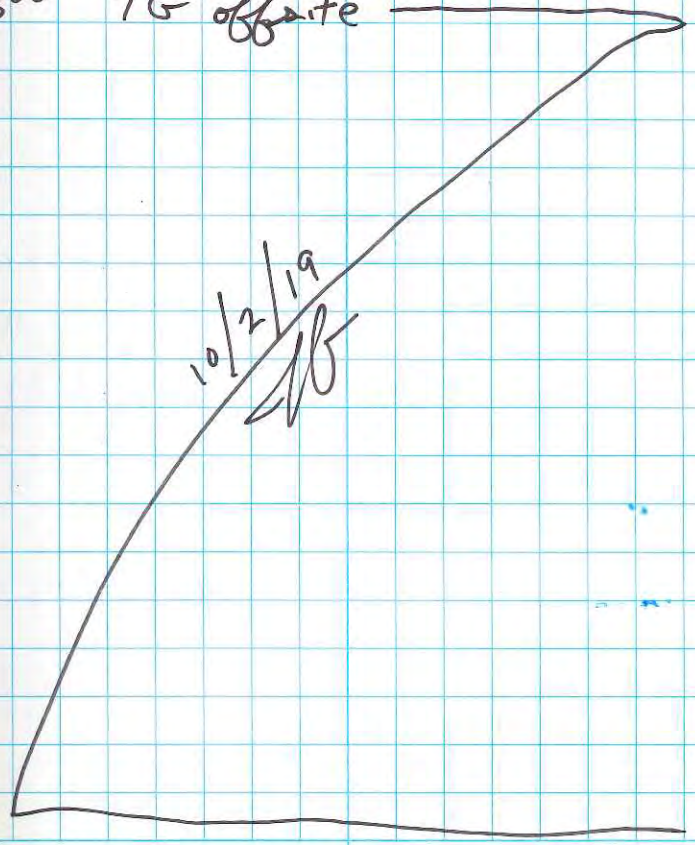
Project / Client LPR / USACE

Diamond Alkali 044 / CWCM

12^{30} TG drives to FedEx to deliver coolers to be sent out. Unable to be back in time for ebb tide sampling, No oversight provided on afternoon sampling.

13^{15} Coolers dropped at FedEx

13^{50} TG offsite



Attachment 3

Sample Tracking Log

CWCM #4

Cidra Groundwater Contamination Site
SAMPLE TRACKING LOG

Trace VOC LAB: _____ INORGANIC CLP LAB: _____

CLP CASE NO: _____ ORGANIC CLP LAB: _____ SUBCONTRACT LAB: Katahdin

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	DEPTH (feet)	Trace VOC CLP NO.	ORGANIC CLP NO.	INORGANIC CLP NO.	SUBCONTRACT ANALYSIS	QA/QC
19Q-CE02-T102-BS-CDM	10/2/19	900	SW	B	—	—	—	SSC, POC/DOC, TAL Metals, Total Hg	MS/MSD
19Q-CE02-T102-BS-CDM-100	10/2/19	900	SW	B	—	—	—	↓	Duplicate

ANALYSIS SUMMARY: SSC- suspended solid concentration, POC/DOC- particulate organic carbon / dissolved organic carbon, TAL metals- total + dissolved metals, Total Hg- total + dissolved Hg

CWCM #4

Cidra Groundwater Contamination Site
SAMPLE TRACKING LOG

Trace VOC LAB: _____ INORGANIC CLP LAB: _____

CLP CASE NO: _____ ORGANIC CLP LAB: _____ SUBCONTRACT LAB: SGS AXYS

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	DEPTH (feet)	Trace VOC CLP NO.	ORGANIC CLP NO.	INORGANIC CLP NO.	SUBCONTRACT ANALYSIS	QA/QC
19Q-CE02-T102-BS-CDM	10/2/19	900	SW	B	—	—	—	D/F, PCBs, Pest, PAH	MS/MSD
19Q-CE02-T102-BS-CDM-100	10/2/19	900	SW	B	—	—	—	↓	Duplicate

ANALYSIS SUMMARY: D/F - Dioxin/furan, PCB - polychlorinated biphenyls, Pest - organochlorine pesticides, PAH - polycyclic aromatic hydrocarbons